

**Migraine or Migraine Status ED Protocols**  
**Neurology Department - Headache Division**  
Mayo Clinic - Rochester, MN

Status Migrainosus = migraine attack wherein the headache phase lasts more than 72 hours with or without treatment (either continuous pain or interruptions of < 4 hours not counting relief during sleep).

• **IV Dihydroergotamine (DHE) Protocols:**

Can be used with repetitive IV doses or continuously IV (see below).

Contraindications to DHE-45 use:

- Pregnancy
- History or suspicion of ischemic heart disease
- History of coronary artery disease or Prinzmetal's angina
- Severe peripheral vascular disease
- Onset of chest pain following test dose of DHE
- Use of a triptan within 24 hours
- Elevated blood pressure (Uncontrolled hypertension)
- Previous adverse reaction
- Basilar or hemiplegic migraine
- MAO inhibitors (Nardil) within preceding 2 weeks

Metoclopramide may cause extrapyramidal side effects such as dystonia, akathisia, and oculogyric crisis. Thus, consider using Benztropine mesylate (Cogentin) either to treat the side effects or prevent them with pretreatment.

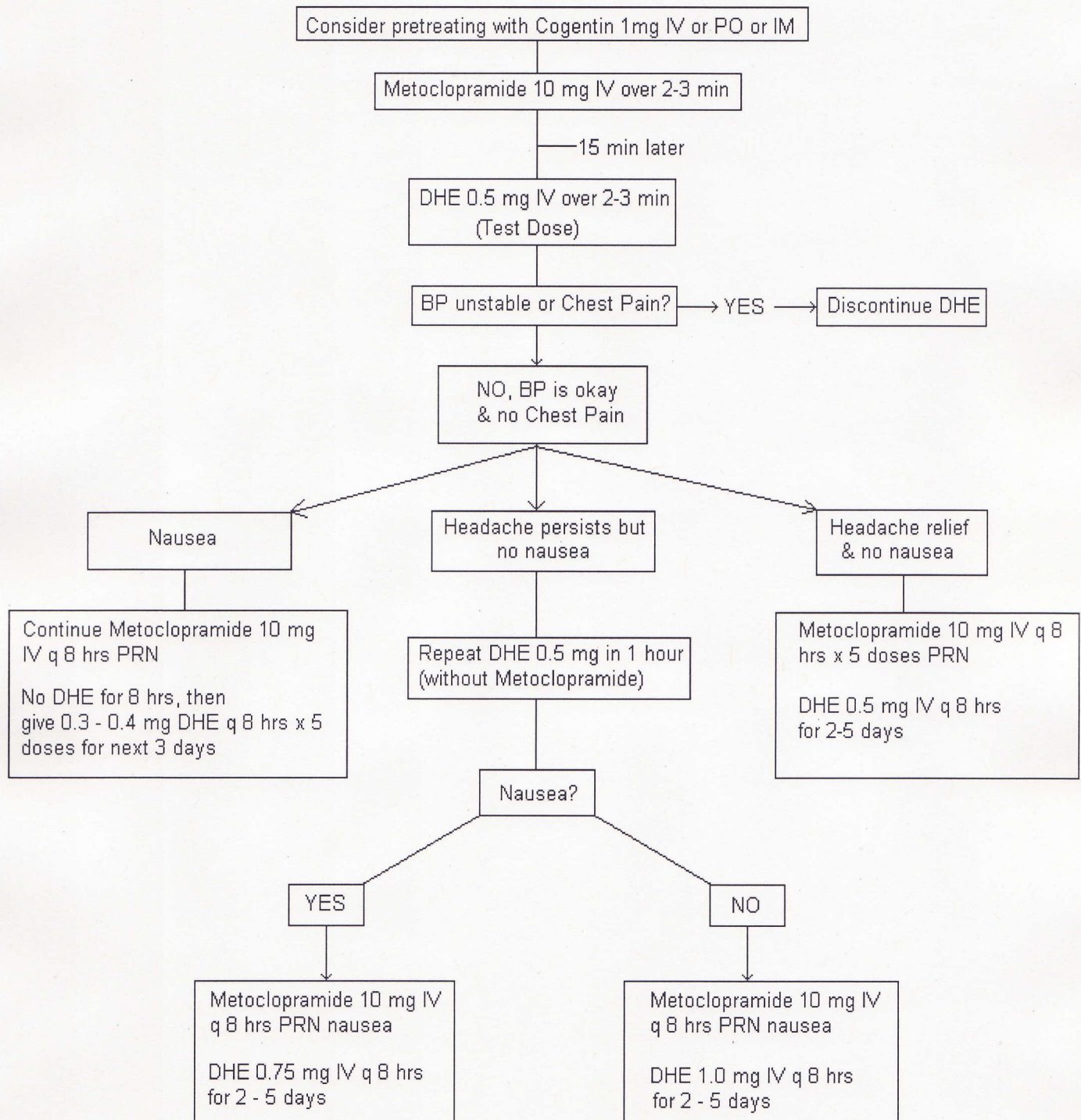
Avoid opioids during either of the DHE protocols as they may prolong the headache via analgesic rebound.

Investigate the atypical:

- First/worst severe headache
- New type of headache or progressive pattern (especially if age > 50)
- Onset that is rapid, positional, progressive
- Comorbid conditions present (cancer, immunosuppression, pregnancy)
- Neurologic signs/sxs
- Systemic features (confusion, fever, weight loss)

• **Repetitive (Q 8 hrs) IV DHE Raskin Protocol:**

Adapted from: Raskin NH. Headache 1990 ;sup 2:550-3





- **Continuous IV Dihydroergotamine (DHE) Ford Protocol:**

From Ford RG, Ford KT. Headache 1997;37:129-136

1. Metoclopramide 10 mg IV over 2-3 min q 8 hrs for 5 doses PRN nausea
2. Start DHE 3 mg in 1000 cc normal saline IV at 42 mL/hr (may continue up to 7 days)

IF significant nausea:

-reduce the rate of DHE to 21 – 30 mL/hr

IF extrapyramidal symptoms:

-give Benztropine mesylate 1 mg IV/IM/PO

IF diarrhea:

-give diphenoxylate with atropine (Lomotil) 1 – 2 tabs tid prn

-OR – give loperamide hydrochloride 1 – 2 mg tid prn

- **Sumatriptan (Imitrex) SC Protocol:**

Sumatriptan 6 mg SC

May repeat once, 1 hour after initial dose

Contraindicated if ergots/DHE or other 5HT agonists/triptans were used within last 24 hours OR in uncontrolled hypertension, ischemic heart disease, peripheral vascular disease, pregnancy, history of angina.

- **Valproic Acid IV (Depacon) Protocol:**

Depacon IV loading dose 15 mg/kg in D5W or NS at 20 mg/minute, followed by 5 mg/kg every 8 hours as needed

Max recommended rate is 20 mg/minute. No telemetry required.

Avoid in patients with past hepatic disease or the pregnant patient.

Schwartz TH, et al. Headache. 42(6):519-22, 2002

- **Alternate Valproic Acid IV (Depacon) Protocol:**

500 mg IV Valproic Acid in 100 cc NS over one hour (go with max rate)

---or---

1 gram IV Valproic Acid in 250 cc of NS over one hour

Efficacy similar to 1 mg IV DHE given with 10 mg metoclopramide IM, DHE may offer less recurrence in 24 hrs.

Benefits of Depacon: lack of cardiovascular side effects, lack of interaction with triptans or ergotamine derivatives, lack of sedation, absence of potential for addiction/habituation.

Edwards KR, et al. Headache 41(10):976-80, 2001

*Most common dosing:*

*500 mg Depacon IV at 20 mg/min times one dose (after 1,000 cc of NS)*

**Anti-emetics/Neuroleptics:**

Caution: To avoid extrapyramidal reactions, dystonia, akathisia consider pre-treating with 1 mg po Benztropine Mesylate (Cogentin).

IV Compazine is once again available as well.

- **Droperidol (Inapsine) Protocol:**

**CAUTION** – there is a black box warning for Droperidol because it can produce QT prolongation and/or Torsades de Pointes. Please read the excerpt below regarding at risk individuals:

From MICROMEDEX:

DROPERIDOL has been associated with QT INTERVAL PROLONGATION, CARDIAC ARRHYTHMIAS, TORSADES DE POINTES, VENTRICULAR TACHYCARDIA, and CARDIAC ARREST. There have been fatalities related to droperidol-induced dysrhythmias. The risk of adverse cardiac effects increases with higher doses of the drug; however, proarrhythmic effects have occurred when the drug was given at or below manufacturer-recommended dose levels. The manufacturer recommends that electrocardiographic (ECG) monitoring be done prior to administration of droperidol. The drug should not be administered in men with QTc intervals above 440 milliseconds (msec) or in women with QTc intervals above 450 msec. ECG monitoring should continue for 2 to 3 hours after completion of droperidol treatment. At-risk patients, according to the manufacturer, include those with



congestive heart failure, bradycardia, cardiac hypertrophy, hypokalemia, or hypomagnesemia; also those using diuretics or other drugs known to cause QT interval prolongation (Anon, 2001; Ahmed, 2001).

Pretreat with 1 mg PO or IV or IM Benztropine mesylate

Droperidol 2.5 mg IV over 2-3 min , if the headache persists after 30 minutes, you may repeat

Droperidol 2.5 mg IV, if the headache persists after 30 minutes, you may repeat

Droperidol 2.5 mg IV, (total dose 7.5 mg IV)

The patient should then be given a prescription for Benztropine mesylate (Cogentin) 1 mg po bid for the next three days. They should take the Cogentin for three days following droperidol to avoid the very unpleasant side-effect of akathisia.

Adapted from: Wang SJ, et al. Headache 1997; 37:377-382

- **Alternate Droperidol IM Protocol:**

**CAUTION** – there is a black box warning for Droperidol because it can produce QT prolongation and/or Torsades de Pointes.

Pretreat with 1 mg PO or IV or IM Cogentin

2.5 mg Droperidol IM (no other doses given in this study)

From: Richman PB et al. American Journal of Emergency Medicine. 20(1):39-42, 2002

- **Promethazine hydrochloride (Phenergan) Protocol:**

Consider pretreatment with 1 mg PO or IV or IM Cogentin (may worsen anticholinergic sx's)

12.5 or 25 or 50 mg promethazine IV given as piggyback with 50 cc of D5W over 15 minutes

May repeat q 4- 6 hrs prn up to 100mg/24 hrs

- **Chlorpromazine Hydrochloride (Thorazine) Protocol:**

Consider pretreatment with 1 mg PO or IV or IM Cogentin (may worsen anticholinergic sx's)

500 cc Normal Saline IV bolus

Chlorpromazine 12.5 mg IV (at 1 mg/min)

May repeat in 20 minute intervals up to 3 times (max dose of 37.5 mg)

Bell R, et al. Ann Emerg Med 1990; 19:1079-1082

- **Alternate Thorazine protocol**

Consider pretreatment with 1 mg PO or IV or IM Cogentin (may worsen anticholinergic sx's)

5 cc/kg Normal Saline IV bolus

Chlorpromazine 0.1 mg/kg IV at a rate of 1 mg/min

May repeated twice at 15-30 minute intervals (Max dose not to exceed 37.5 mg)

Side effects: hypotension, dizziness, sedation, burning at IV site, dry mouth, nasal congestion, extrapyramidal reactions.

Significant sedation or orthostatic hypotension may warrant several hours – overnight observation.

Lane PL, et al. Am Emerg Med 1989; 18:360-365

- **Alternate Thorazine protocol**

Consider pretreatment with 1 mg PO or IV or IM Cogentin (may worsen anticholinergic sx's)

Chlorpromazine 1 mg/kg IM

Slower onset of action than IV, same side effects

McEwen, et al. Ann Emerg Med 1987; 16:758-763.



**Note:**

The Mayo Pharmacy has agreed to produce Chlorpromazine Hydrochloride (Thorazine) suppositories which are no longer available anywhere else. These can be used in 25 mg or 100 mg doses PR as a very sedating, anti-emetic, anti-migraine rescue medication that can preclude a trip to the ER. 100 mg suppositories can be cut in half and used this way or 25 mg suppositories can be re-dosed in 30 minute intervals up to 100 mg per 24 hrs.

- **Metoclopramide Hydrochloride (Reglan) Protocol:**

Pretreat with 1 mg PO or IV or IM Cogentin

Metoclopramide 10 mg IV

Side Effects: sedation, akathisia, dystonic reactions

Tek DS, et al. Ann Emerg Med 1990; 19:1083-1087

- **Haloperidol (Haldol) Protocol:**

Pretreat with 1 mg PO or IV or IM Cogentin

500 – 1000 cc IV Normal Saline bolus

Haloperidol 5 mg IV in a minibag over 2-3 minutes

Less sedation than Chlorpromazine or Prochlorpromazine and does not produce orthostatic hypotension

Fisher H. J Emerg Med 1995; 13:119-122

**Other:**

- **Dexamethasone (Decadron) Protocol:**

Can be used in association with either a Triptan, DHE, Anti-emetic, NSAID, or Opioid

Dexamethasone 8 mg IM times one\* or 4-8 mg IV times one.

Gallagher RM. Headache 1986;26:73-74

- **Magnesium Sulfate Protocol:**

1 gram infused IV in a 10% solution of IVF's given over 15 minutes

Mauskop A, et al. Headache 1996;36:154-160

- **Cluster Headache Protocols:**

Oxygen 8- 10 Liters/minute via a Closed Face Mask for up to 15 – 20 minutes

Sumatriptan 6 mg SC (see above)

Dihydroergotamine 1.0 mg SC, IM, or IV

Consider criteria for hospitalization:

- 1) Dehydration
- 2) Significant comorbid illnesses
- 3) Pain requiring prolonged parenteral protocol